



SEQUENCE LISTING

0110 The University of British Columbia

0120 Regulation of Embryonic Transcription in Plants

0130 4810-58741

0140 PCT/CA 01/00907

0141 2000-08-04

0150 US 60/147,133

0151 1999-08-04

0160 23

0170 PatentIn version 3.0

0210 1

0211 12

0212 DNA

0213 Arabidopsis thaliana

0220

0221 misc_signal

0222 (1)..(12)

0223 CEB element at 381-369 bp

0400 1

acacattccc tc

12

0210 1

0211 12

0212 DNA

0213 Artificial sequence

0220

0221 misc_signal

0222 (1)..(12)

0223 consensus sequence

0400 2

acgacgtgtccc tc

12

0210 3

0211 25

0212 DNA

0213 Artificial sequence

<220>
 <221> primer
 <212> (1)..(25)
 <213> AtproFW

<400> 3
 ctactagatt ggttggttgg ttcc

25

<210> 4
 <211> 27
 <212> DNA
 <213> Artificial sequence

<220>
 <221> primer
 <212> (1)..(27)
 <213> AtproRV

<400> 4
 tgcctgtgtt gtgtcgaaa ataatgg

27

<210> 5
 <211> 27
 <212> DNA
 <213> Artificial sequence

<220>
 <221> primer
 <212> (1)..(27)
 <213> AP1

<400> 5
 ggaactcaat acgactcact atagggc

27

<210> 6
 <211> 25
 <212> DNA
 <213> Artificial sequence

<220>
 <221> primer
 <212> (1)..(25)
 <213> Bnwalk1

<400> 6
 aaagagtga gcatgggta tgagg

25

<210> 7
 <211> 18
 <212> DNA

0213> Artificial sequence

0220>

0221> primer
0222> (1)..(18)
0223> AP2

0400> 7
ctataggggt cgagcggc

18

0210> 5
0211> 15
0212> DNA
0213> Artificial sequence

0220>
0221> primer
0222> (1)..(25)
0223> Bnwalk2

0400> 8
cggaagaag caaaggttga aaagg

25

0210> 9
0211> 14
0212> DNA
0213> Artificial sequence

0220>
0221> primer
0222> (1)..(24)
0223> Lawalk1

0400> 9
gatagtttgt ggtaagaaga gaga

24

0210> 10
0211> 14
0212> DNA
0213> Artificial sequence

0220>
0221> primer
0222> (1)..(24)
0223> Lawalk2

0400> 10
gtcagtggga agaaacagag gttg

24

<210> 11
<211> 25
<212> DNA

<213> Artificial sequence

<220>
<221> primer
<222> (1)..(25)
<223> EnproFW

<400> 11
ctgaattcac caaagaaaca actcg

25

<210> 12
<211> 16
<212> DNA
<213> Artificial sequence

<220>
<221> primer
<222> (1)..(26)
<223> EnproRV

<400> 12
tgaatttcg ttttttttt taggcg

26

<210> 13
<211> 23
<212> DNA
<213> Artificial sequence

<220>
<221> primer
<222> (1)..(23)
<223> LaproFW

<400> 13
cagcctaacc ggtaaaattg gcc

23

<210> 14
<211> 23
<212> DNA
<213> Artificial sequence

<220>
<221> primer
<222> (1)..(23)
<223> LaproRV

0400 14
 agttcagttt tgtgtcggag agg

23

0210 15
 0211 393
 0212 DNA
 0213 Artificial sequence

0210
 0211 promoter
 0212 (1)..(393)
 0213 transcriptional regulatory region

0400 15
 agtctaaga acacacatto cctcaaat ttatgcacat gtaatcatag tttagcacia 60
 ttaaaaaata atgtagtatt aaagacagaa atttgtagac ttttttttgg cgttaaagga 120
 agtctaagtt tatacgtaca ttttatctta agtggaaaaa cgaaattttc catcgaaata 180
 tatgaattta gtatatatat ttctgcaatg taotattttt ctatttttggc aacttttcagt 240
 ggactactac tttattacaa tgtgtatgga tgcattgagtt tgagtataca catgtctaaa 300
 tgcattgcttt gcaaaaacgt aaggaccaca aaagaggatc catgcaaata catctcatag 360
 agtctccat tattttccga cacaacaga gca 393

0210 16
 0211 934
 0212 DNA
 0213 Artificial sequence

0210
 0211 promoter
 0212 (1)..(934)
 0213 transcriptional regulatory region

0400 16
 ctagtagatt gggttggttg tttccatgta ccagaaggct taccctatta gttgaaagtt 60
 gaaactttgt cccctactca attcctagtt gtgtaaatgt atgtatatgt aatgcgtata 120
 aaacntagta cttaaatgac taggagtggt tottgagacc gatgagagat gggagcagaa 180
 ctaaagatga tgacataatt aagaacgaat ttgaaaggct cttagggtttg aatcctatto 240
 gagaatgttt ttgtcaaaga tagtggggat ttgaaaccaa agaaaaacatt taaaaaatca 300
 gtatccgggt acgttcattg aaatagaaaag tgggtotagga totgattgta attttagact 360
 taaagagttt ctttaagatto aatcctgggt gtgtacaaaa ctacaaataa tatatttttag 420
 actattttgg ctttaactaaa cttccactca tttttactg aggttagaga atagaatttg 480

| | |
|--|-----|
| gaataaacac attcccgaga aataactcatg atcccataat tagtcagagg gtatgccaat | 540 |
| agatetaag aacacacatt cccctaaaatt ttaatgcaca tgtaatacata gtttagcaca | 600 |
| attcaaaaaat aatgtagtat taaagacaga aatttgtaga cttttttttg gcgttaaagg | 660 |
| aagactaagt ttatacgtac attttattttt aagtggaaaa ccgaaatttt ccacgcgaat | 720 |
| atatgaattt agtatatata tttctgcaat gtactattttt gctatttttg caactttcag | 780 |
| tggaactacta ctttattaca atgtgtatgg atgcatgagt ttgagtatac acatgtctaa | 840 |
| atgcattgctt tgcaaaacgt aacggacac aaaagaggat ccacgcgaat acatctcata | 900 |
| gcttcctaca ttatttttcg acacaaaacag agca | 934 |

<210> 17
 <211> 1538
 <212> DNA
 <213> Artificial sequence

<220>
 <221> promoter
 <222> (1)..(1583)
 <223> transcriptional regulatory region

| | |
|--|-----|
| <400> 17 | |
| ctgacttcac caaagaaaca aatcgagtcg ttatccatct cctccataacc atcgctccac | 60 |
| cctttgcctt caccgttttc ggctcggctc ctacacatgc aacccggccc aaaccggttt | 120 |
| acctcgttga gtactccatgc taccttccac caacgcattg tagatcaagt atctccaagg | 180 |
| ccatggatat cttttatcaa gtaagaaaag ctgactcctc ccggaacggc acgtgcgatg | 240 |
| actcctcgtg ccttgacttc ttgagggaag ttcagaacgc ttcagggtct ggcgatgaaa | 300 |
| ctcaaggggc cgaggggctg cttcaggctc ctcccgggaa gaattttggc gggcgcgctg | 360 |
| agagagcgga gcaagttatc attgtgtgcg tagaaaaatc attcaagaac accaacgtta | 420 |
| acccaaaaga tataggtata cttgttggtga actcaagcat gtttaatcca actccatcgc | 480 |
| ctcctcgcat ggctggttaac actttcaagc tcogaagcaa cgtaagaagc tttaaccttg | 540 |
| gtggcatggg ttgtagtgc ggcggttatag ccattgatct agcaaaaggac ttgttgcatg | 600 |
| ccataaaaaa taagtatgct cttgttggtga gcaagagaga caccacttat aacatttaac | 660 |
| ctggcgataa taggtccatg atgggttcaa attgcttggt ccgtgttggt ggggcgccta | 720 |
| ttttctctc caacaagcct ggagatcgta gacgggtcaa gtaacagcta gttcacacgg | 780 |
| ttogaagcca taacggagct gacgacaagt cttttcgttg cgtgcacaaa ggagacgatg | 840 |
| agaaaggcaa aatcggagtg agtttgtcaa aggacataac cgatgttggt ggtcgaacgg | 900 |
| ctaaagaaaa catagcaacg ttgggttcgt tgattcttcc gttaaaggag aaactctctc | 960 |

| | |
|---|------|
| ttttcggttac ttttcattgggc aagaaaacccc tcaaagataa aatcaaacat tactacgtcc | 1020 |
| cggtatttcaa acttgctatt gaccattttt gtatcacatgc cggaggcaga gccgtgattg | 1040 |
| atgtgtctaga gaagaaccta gccctagcac ccatcgatgt agaggcatca agatcaacgt | 1140 |
| tacatagatt tggaaaacact tcatctagct caatatggta tgagttggca tacatagaag | 1240 |
| caaaagggaag gatgaagaaa ggtaataaag tttggcagat tgcttttaggg tcaggcttta | 1340 |
| agtgtaacag tgcagtttgg gtggctctaa acaatgtcaa agcttcgaca aatagtcctt | 1360 |
| gggaacactg catcgacaga tacccggcca aaattgattc tgattcaggt aagtcagaga | 1380 |
| ctcgtgtcaa aaacggctgg tctaataaaa ccatgtttgc tctcttttgt ttctttttat | 1440 |
| ttgttataat aatttgatgg ctacgatgtt tctcttggtt gtlatgaata aagaatgcaa | 1500 |
| tggtgttcta gtatttgatt gtcttacatg tatgtatctc ttattttacat gaaattttta | 1560 |
| aaagctctaaa aaaaaaaaaag gaattcgg | 1585 |

<210> 13
 <211> 1069
 <212> DNA
 <213> Artificial sequence

<220>
 <221> promoter
 <222> (1)..(1069)
 <223> transcriptional regulatory region

| | |
|--|-----|
| <400> 13 | |
| cagcttaacc ggtaaaattg gccgtgtacat atattttacca ctgagttaaag acatcagtta | 60 |
| atgatttggtt gttactcaat tgggctaagt gtattattat atgtgttgta tataataaag | 120 |
| gttgaacgta aattttactaa gaatgtggtt ttccaatgtg attgctcttt ggccctcttag | 180 |
| gttttaaccc tactcgagaa gactaatttt aattttactgg caaaaataga aatcaattta | 240 |
| taagtggtta aacaaatcga ttgtataact gattagtgat cactcttagg ttttgatcca | 300 |
| actcgagtat tgagtattga acgttttttt taaataaaaat cttagattttt aaattgggtt | 360 |
| tttgagtaaa aaagttctta atattttctc tttgttttaa tgggtttggt ttgcatttta | 420 |
| taagcttaat ttttctaatt taatatttta tctatcatcg tccgtaaaagt tttatttggc | 480 |
| acaaaactgt tttacttttc taccttataa tttgggaact ggttgagtca aagcgtacgg | 540 |
| gacaaaatag ttttatatto ttattttaaga attaacactc atctcataat tagtcagagg | 600 |
| ctagggagat tcagccaatc aatgctaaca acaaaattct cttaatgato taacgatgct | 660 |
| atttaattat cggatcagta ttcttaataa agaataataa actaattcaa tagttacaga | 720 |

| | |
|--|------|
| taaaaaactta tatagacttt tttatttggga atataaaaagt atcaatatat tatagacaat | 780 |
| atttaaaacg ttaaaaatat aatatttata ttttttatat atttatttca aattgaaaag | 840 |
| cattactttct atcgaaatga atttttagtat attaattaat atttttttaa toggactact | 900 |
| ttctattttt ggcacctttc atctgaactac taattttatt caatgtgtat gcatgcatga | 960 |
| gcatgagtaa tacacatgtc tatataaatg catgtaaaaac gtaacggacc acaaaagtgg | 1020 |
| atccatacaa atacatctca togcacccctc tocgacacaa aactgaaca | 1080 |

<210> 19
 <211> 972
 <212> DNA
 <213> Arabidopsis thaliana;

<220>
 <221> promoter
 <222> (1)..(972)
 <223> FAE1 promoter

| | |
|---|-----|
| <400> 19 | |
| actcataaaa actagtagat tgggtgggtg gtttccatgt accagaaggo ttacctatt | 60 |
| agctgaaagt tgaaactttg ttccctactc aattccatgt tgtgtaaagt tatgtatatg | 120 |
| taatgggtat aaaaagtagt acttaaatga ctaggagtgg ttcttgagac cgatgagaga | 180 |
| tgggagcaga actaaagatg atgacataat taagaacgaa ttgaaaaggo tottaggttc | 240 |
| gaatccctatt cgagaatgtt ttgtcaaaag atagtgggga ttctgaacca aagaaaacat | 300 |
| ttaaaaaatc agtatccggt taogttccatg caaatagaaa gtgggtctagg atctgattgt | 360 |
| aatttttagac ttaaagagtc tottaagatt caatccctggc tgtgtacaaa actacaaata | 420 |
| atataattta gactatttgg ccttaactaa acttccactc attatttact gaggttagag | 480 |
| aatagacttg cgaataaaca cattcccgag aaatactcat gatcccataa ttagtcagag | 540 |
| ggtatgcaca tcagatctaa gaacacacat tccctcaaat tttaatgcac atgtaatcat | 600 |
| agtttagcac aattcaaaaa caatgtagta ttaaagacag aaattcttag actttttttt | 660 |
| ggggttaaag gaagactaag ttctatacgtc cattttattt taagtggaaa accgaaattt | 720 |
| ttcatcgaaa tatatgaatt tagtatatat attctctgaa tgtactattt tgcatttttg | 780 |
| gaaactttca gtggactact actttattac aatgtgtatg gatgcctgag ttgaggtata | 840 |
| acatgtctca aatgcatgct ttgcaaaaacg taacggacca caaaagagga tccatgcaaa | 900 |
| tacatctcat agcttccctc attatttttc gacacaaaac gagcaatgac gtccgttaac | 960 |
| gttaagctcc tt | 972 |

0210 20
 0211 1790
 0212 DNA
 0213 Brassica napus;

0220
 0221 promoter
 0222 (1)..(1790)
 0223 FAE1 promoter

0400 20
 ggttgggcaa atctgacttc accaaagaaa caactcgagt cgttatccat ctcttcataa 60
 ccatcgctcc actcttttgc ttacccgttt tgggttcggt tctctacato gcaaccgggc 120
 ccaaccgggt ctacctggtt gactactcat gctacattcc accaaccgat tctagatcaa 180
 gtaattccaa ggtcatggat atctttttat aagtaagaaa agctgatccct tctcggaacg 240
 gcacatggga tgaactggtc tggcttgact tcttgaggaa gattcaagaa cgttcaggtc 300
 taggggatga aactcacggg ccggaggggc tgcctcaggt cctcccccgg aagaacttttg 360
 cggcgggcgg tgaagagacg gagcaagtta ctattggtgc gctagaaaaat ctattcaaga 420
 acaccaaagt taaccttaaa gatataggta taattgtggt gaactcaagc atgtttaatc 480
 caactccatc gctctccggc atggctgcta acaatttcaa gctccgaagc aagtaagaa 540
 gcttaaacct tgggtggcat ggttgtagtg ccggcggtat agccattgat ctagcaaaagg 600
 attctttgca tctccataaa aatacgtatg ctcttctggt gagcacagag aacatcactt 660
 ataacattta cgtctgtgat aataggtcca tgatggttcc aaattgcttg tcccggttg 720
 gtgggggcgc tattttgctc tccaaacaagc ctggaxatcg tagacggctc aagtaacgac 780
 tagttcacac ggttcgaacg cataccggag ctgacgacaa gtcttttctg tgcgtgcaac 840
 aaggagacga tgagaacggc aaaatcggag tgagtttgct caaggacata accgatgttg 900
 ctggtcgaac ggttaagaaa aacatagcaa cgttgggtcc gtcgattctt ccgttaagcg 960
 aaaaactctt tttttctgtt accttcctgg gcaagaaaat tttcaaaagt aaaatcaaac 1020
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 gagccgtgat tgatgtgcta gagaagaacc tagccctagc accgatcgat gtagaggcat 1140
 caagatcaac gttacataga ttggaaaaca ctccatctag ctcaatatgg tatgagttgg 1200
 ctacataga agcaaaaagg aggatgaaga aaggttaata agtttggcag attgctttag 1260
 ggtcaggctt taagtgtaac agtgcagttt gggctgctct aaacaatgtc aaagcttcga 1320
 caaatagctc ttgggaacac tgcctcgaca gataccgggt caaaattgat tctgattcag 1380
 gtaagtcaga gactcgtgct caaaacgggt ggtcctaata aacgatgttt gctctctttc 1440

| | |
|---|------|
| gtttctttttt atttggttata ataatttgat ggcacgatg tttctcttgt ttgttatgaa | 1500 |
| taaagaatgc aatgggtgttc tagtatttga ttgttttaca tgtatgtatc tcttattttac | 1550 |
| atgaaatttt taaacgccta aaaaaaaaaa cgggaattccg atgacgtcca ttaacgtaaa | 1600 |
| gctctttttac cattaagtea taaccaacct tttcaacctt tgcctctttc cgttaacggc | 1650 |
| gacgtcgccg ggaaaagcct atcggtttac catagacgat cttcaacctt tatactattc | 1700 |
| ctatctccaa cacaacctca taaccatgcg tccactcttt gccttcacgc | 1750 |

<210> 21
 <211> 1210
 <212> DNA
 <213> Lunaria annua;

<220>
 <221> promoter
 <222> (1)..(1210)
 <223> FAE1 promoter

| | |
|---|-----|
| <400> 21 ggcgggggag ttccagctta accggtaaaa ttggcctgta catatattta ccactgagta | 50 |
| aagacatcag ttaatgattt gttgctaact aattgggcta agtgtattat tatatgtgtt | 100 |
| gtatataata aaggtagaac gtaaatttac taagaatgtg tttttccaat gtgattgctc | 150 |
| tttggcctct taggtttgaa tccactcga gaagactaat ttttaatttac tggcaaaaat | 200 |
| agaaatcaat ttataagtgt ttaaacaaaat cgatgggtata actgattagt gatcactctt | 250 |
| aggttttgat ccaactcgag tattgagtat tgaacgcctt ttttaaataa aatcttgatt | 300 |
| tttaaattgg ttttttgagt aaaaaagttc ttaatatatt ctctttgttt taatgggttt | 350 |
| gttttgcat ttataagctt aattttttta atttaaatatt ttatctatca ttgttcgtaa | 400 |
| agtttttatt ggcacaaaat tgttttactt ttctacotta taatttggga accgggtgag | 450 |
| tcaaaagcgt cgggacaaat atgttttata ttcttattta agaattaaca ctcactctat | 500 |
| aat tagtcag aggttaggga gattcagcca atcaatgcta acaacaaaat tctcttaattg | 550 |
| atctaacgat gctattttaa attcggatca gtattcttaa ataagaatat aaaactaatt | 600 |
| caatagttac agataaaaaa ttatatagac ttttttattt ggaatataaa agtatcaata | 650 |
| tattatagac aatatttata acgttaaaaaa tacaatatat atatttttta tatatttatt | 700 |
| tcaaatggaa aagcattact tctatcgaaa tgaatttttag tatattaatt aatatttttt | 750 |
| taatcggaat actttcttat ttggcaacct ttcactctgac taactaattta tttcaatgtg | 800 |
| tatgcctgca tgagcatgag taatacacat gtctatataa atgcatgtaa aacgtaacgg | 850 |
| accacaaaag tggatccata caaatacact tcatcgcaac ctcttcgaca caaaaactgaa | 900 |

| | |
|---|------|
| caatgaagtc tgtgaacgta aaactccttt accattacgt cataaccaac tttttcaacc | 1140 |
| tctgtttctt cccactgaag gggatcctcg ccggaaaagg ctctcgtctt accacaaaag | 1200 |
| atctccacca | 1210 |

1210: 22
 1211: 1141
 1212: DNA
 1213: Artificial sequence

1220:
 1221: promoter
 1222: (1)..(1141)
 1223: consensus sequence of A.t., L.a., and B.n. PAEI promoters

| | |
|--|------|
| 1400: 23 | |
| nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnmsksrkw | 60 |
| warmyckyr wynksrwwk gwykkkwyb anntsbyrha rrwkdmtay bmtmtkwyk | 120 |
| agwhrywrw rambdtvdh yvtamnnawt tmcmmkdkk rtrwwwkknn natgwdddk | 180 |
| yhmwnngcb tvtwmvryk drdwsbkrmn ygmbwwknws ydvtyywww ddmckrkvrr | 240 |
| wrtngmrn ymvawbahr rrynngwtba mayrrwtmn nnnnakamck rakywgnra | 300 |
| knstcttwk skttkvrts wannoragda nkdhkwwkw aamgywnnn nnnnwtykka | 360 |
| rhbarwdww hsawkkwnn aahysrkkwt bykrktmvan nggtmwmk wawywkmdmd | 420 |
| wbgtynnnnn ggrrtyygtk nkrmwtyykw kannckwraw dnktcthnnt twwkmktywn | 480 |
| ncywksmtng kshrbaaavy twymwwwrry ahannnnwdy wwkaastwyky bvcskwwnny | 540 |
| awytksswn ytsryyrwkt nnsrwrstd rsmgrannya raphygykwn trwwbwshtw | 600 |
| phbragaahy wmbmmybako hcmkawykak kyagaggsn nnnnnnnnnn nnnnatcard | 660 |
| dyyaasrwy manakwyys baannayyth annwwgcwnn atdtrrtmwk nnnnnnagtw | 720 |
| nnnnnnnkn asaaknyaaa avkaakkhwr wankwamrgw hadaaabttid krnngaytky | 780 |
| tttnnnnty r gvtntaard gwannnnnnn nnnnnnngws dmwvtwwaya nygtnnnnnn | 840 |
| nnnnayawwt nkwyttddr wrbaytnnn nrmayygy addyayymd todawmkwda | 900 |
| tmmnnattyn rgtawrtnn nnnmtmktky ybhaawnnnn ngkmetaht wwvkatkt | 960 |
| kgwmmcttt rkyknnctw ytwmttrrt wyaatrwtm natqsmtrcn atgwknnyw | 1020 |
| tgwkrwtay rmatrwmkaw wkvmtgsw nnsyarwayk traykgwyyn acawrwrwgk | 1080 |
| atcymtdnaw wtacatswma thkynwhmek cnnnnnnnnnt mmramamaaa nodgarywnn | 1140 |
| n | 1141 |

00100 23
 00110 1055
 00120 DNA
 00130 Artificial sequence

00200
 00210 promoter
 00220 (1)..(1055)
 00230 consensus sequence of A.t. and L.a. FAE1 promoters

04000 23
 actsakwaaa rmyakyagwt nntgrttkgt tgktwyycan ntgkrcyarr wgkmttayym 60
 tathwgttigw awrtwrwaam kktrkwmost amnnawttmc tarkwrtgtr wwtktnnnat 120
 qtrwwtgywm tnnngestmt warryktrrw wcytamwyga swagnastrr ttytwrwkw 180
 okrksarara trgrarymra wytawarrtg wtkamayaaw tmnnnnnnnak aackrattwg 240
 wrakshotet taggtttkra tccwaytoga gwatkkwktw ktsaamgmtw nnnnnnttt 300
 tkaamyaaar wmwswatattw waaawtsrkt wtyygrktam nnnnrgttcwt rmwawtwk 360
 mktkgtttwn nnggrtytgw ttkkmatitt akanncttaa wkwtctmnn ttaakattyw 420
 atcywksmtn gtsyryaaar ytwyawwtrr yayannntk ttwkactwtt ykrccttann 480
 taawytkssa netsrttrwk tncwragst asmgrayara ywtgykwnta waywcowtwy 540
 ynagaawtam ymmtsateyc ataattagtc agaggstakg nnnnnnnnnnc caatcarwkc 600
 taasaacama nattcyctya annatytwan natgownatk taatmwtnnn nnnagtwnn 660
 nnnnakmasa atwyaaaamt aatkyartan ttamagayar aaayttrtan ngactttttt 720
 nnttggmrtn taaargwann nnnnnnnnnn ngaowawrtt tatanegtnn nnnnnnnnay 780
 attntatatt twrtrkann nnnnnnaay ygaaawknt tmowtokawm kawatgaatt 840
 tnaqtatath nnnnnatatt tytkyaatng kaetayttts ctattttggc amctttcaky 900
 kkaactactam tttattwcaa tgtgtatgsa tgoatgagyw tgagtantac acatgtctaw 960
 atrmatgwt ngyaaaaagt aacggacac aaaagwggat coatrcaaat acatctcatm 1020
 gewyctcnn nnnnnntcgg acacaaanew garca 1080